APPENDIX F.1

2004 Water Quality Report

Appendix F.1

Riverside Public Utilities 2004 Water Quality Report

Primary Standards: Mandatory Health-Related Standards

Percent system source - Groundwater 95%

Contaminant	State MCL	State PHG	Riverside Public Utilities Average	Riverside Public Utilities Range	Sources In Drinking Water
Microbiological					
Total Coliform (P/A) (a)	5%	0%	0%	0 - 1.1%	Naturally present in environment
Clarity					
Turbidity	0.5 NTU	NS	0.1 NTU	0 - 0.4 NTU	Naturally present in environment
Regulated Organic					
Total Trihalomethanes "TTHMs"	80 ppb	NS	7 ppb	ND - 54 ppb	By-product of drinking water chlorination
Halocetic Acids "HAA5"	60 ppb	NS	1.0 ppb	ND - 10.0 ppb	By-product of drinking water chlorination
Chlorine	4 ppm	4 ppm	0.6 ppm	0.4 - 0.9 ppm	Drinking water disinfectant added for treatment
Control of DBP precursors Total Organic Carbon "TOC"	Treatment Requirement	NS	0.2 ppm	ND - 1.8 ppm	Various natural and man-made sources
Dibromochloropropane "DBCP"	200 ppt	1.7 ppt	11 ppt	ND - 23 ppt	Banned nemotacide still present due to past agricultural activities
Trichloroethylene (TCE)	5 ppb	0.8 ppb	ND	< 0.5 ppb	Discharge from metal degreasing sites & other factions
Regulated Inorganic					
Nitrate (NO_3)	45 ppm	45 ppm	24 ppm	21 - 25 ppm	Naturally present in environment
Fluoride	2 ppm	1.0 ppm	0.6 ppm	0.4 - 0.8 ppm	Naturally present in environment
Arsenic	50 ppb	4 ppt	2 ppb	<2 - 4 ppb	Erosion of natural deposits
Radiological					
Gross Alpha	15 pCi/L	NS	5 pCi/L	3 - 9 pCi/L	Erosion of natural deposits
Uranium	20 pCi/L	0.5 pCi/L	9 pCi/L	6 - 12 pCi/L	Erosion of natural deposits
Lead/Copper (AL) (90% Household Tap)					
Lead (b)	15 ppb	2 ppb	<5 ppb	<5 - 7 ppb	Internal corrosion of home plumbing
Copper (b)	1,300 ppb	170 ppb	560 ppb	<50 - 710 ppb	Internal corrosion of home plumbing
Additional Monitoring					
Radon*	NS	NS	520 pCi/L	490 - 550 pCi/L	Naturally present in environment
Regulated contaminants with no MCLs	Action Level	State PHG or MCLG	Riverside Average	Riverside Range	
Chromium VI	NS	NS	2.3 ppb	1.5 - 2.7 ppb	
Perchlorate	AL 6 ppb	6 ppb	1.7 ppb	<4 - 4.8 ppb	
Vanadium	AL 50 ppb	NS	8 ppb	5-12 ppb	
Boron	AL 1000 ppb	NS	110 ppb	ND-120 ppb	

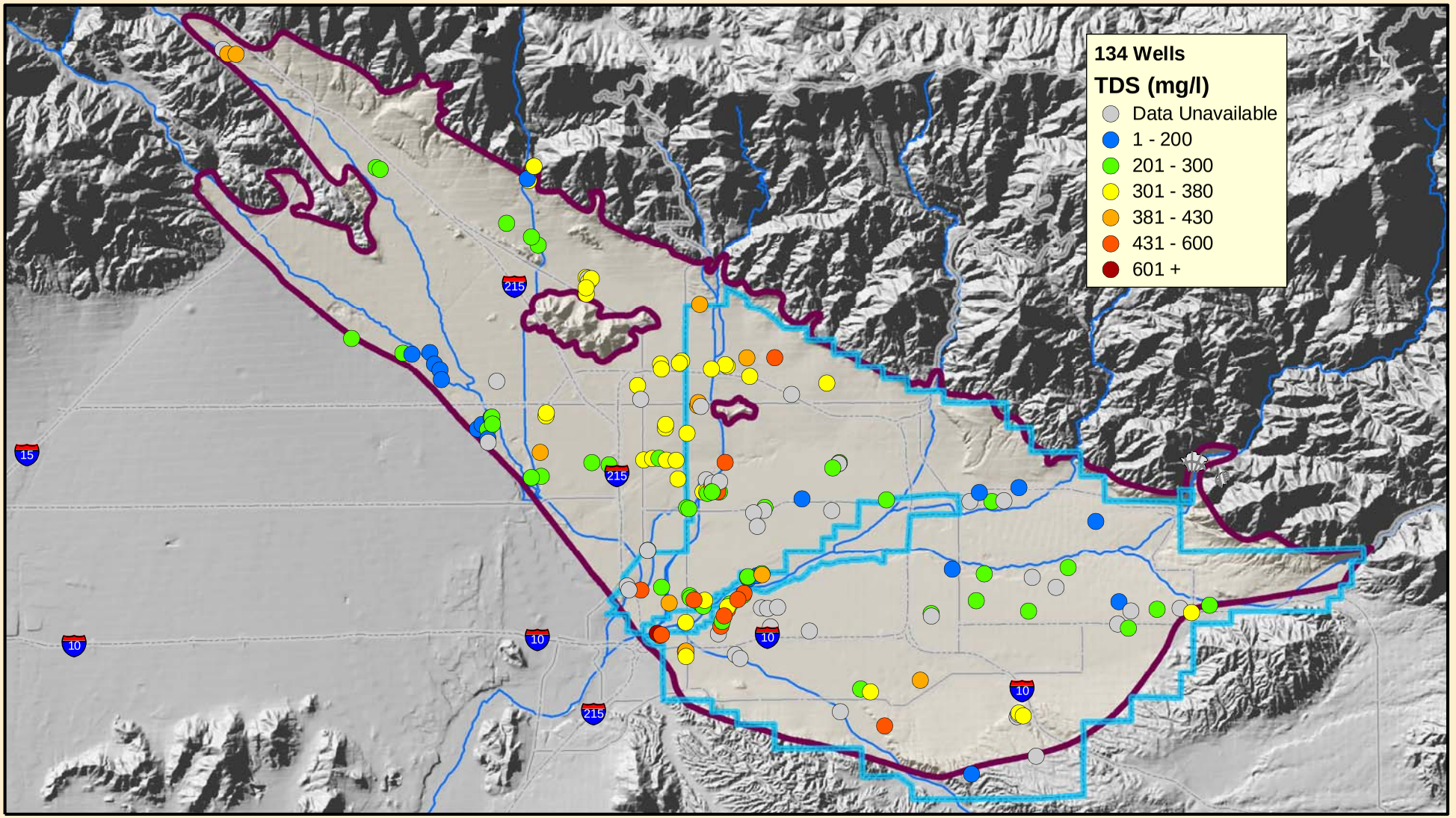
* Most recent sampling compiled in 2003

Source: 2004 RPU Annual Water Quality Report

APPENDIX F.2

Distribution of TDS in Bunker Hill Groundwater Basin

Appendix F.2



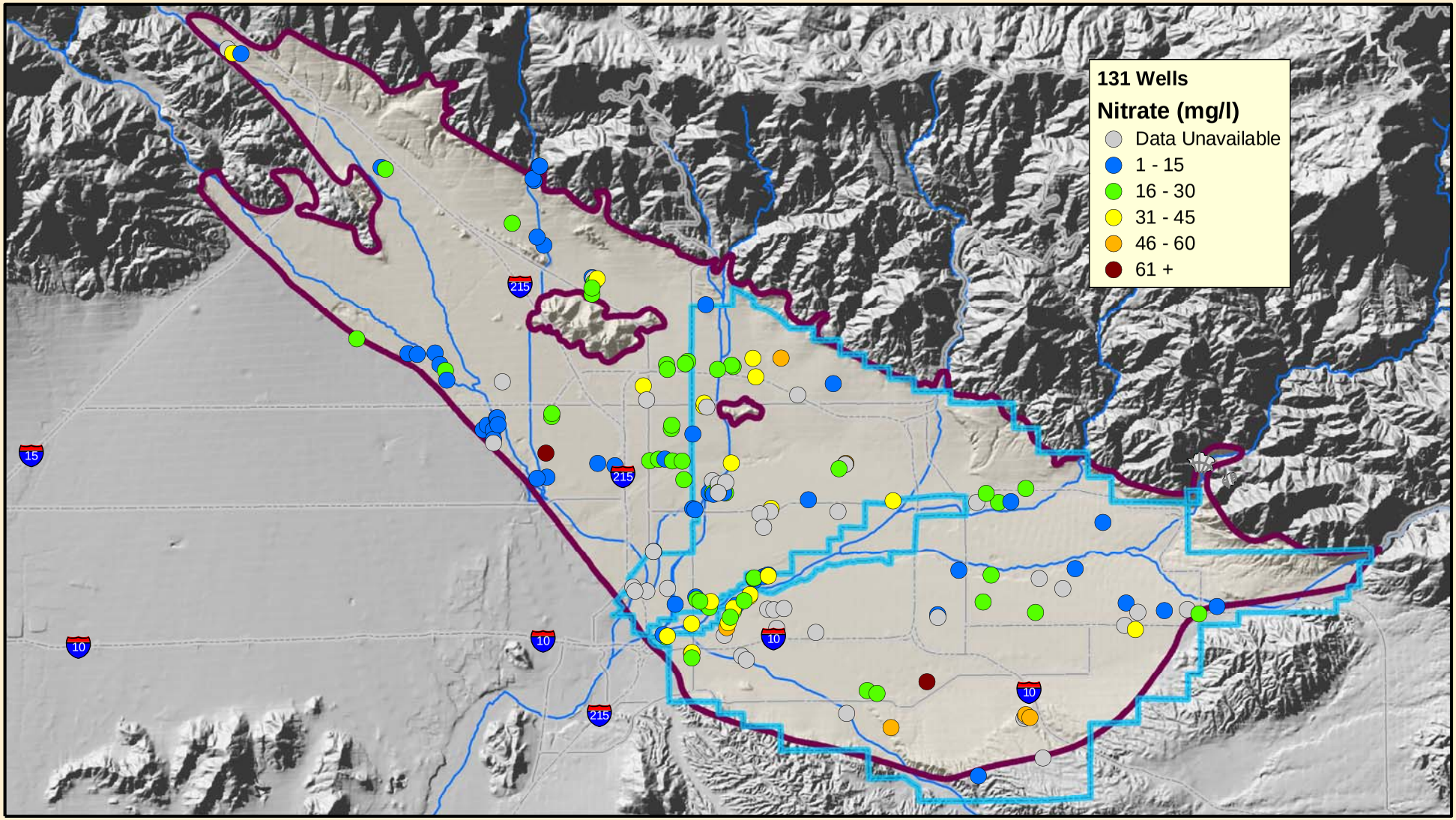
Distribution of TDS in Bunker Hill Basin

Source: 2004 San Bernardino Valley Water Conservation District (SBVWCD) Engineering Investigation

APPENDIX F.3

Distribution of Nitrates in Bunker Hill Groundwater Basin

Appendix F.3



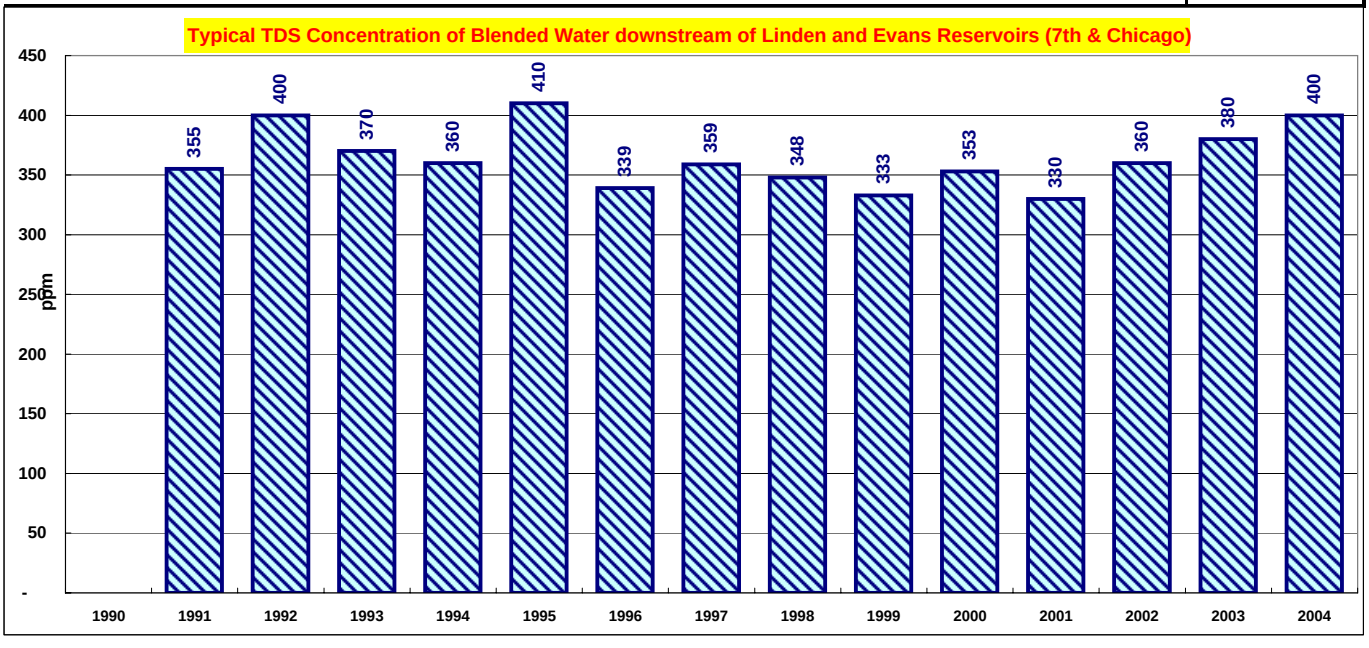
Distribution of Nitrates in Bunker Hill Basin

Source: 2004 San Bernardino Valley Water Conservation District (SBVWCD) Engineering Investigation

Appendix F.4 - TDS in RPU wells by Groundwater Basins

Typical TDS Concentration (ppm)

SAMPLING LOCATION	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Low	Average	High
Bunker Hill Groundwater Basin																		
GAGE 26-1	520	485	490	535	530	380	507	498	509	506	486	480	470	480		380	491	535
GAGE 27-1	495	495	525	540		490	473	479	477	474	463	450	480			450	487	540
GAGE 27-2	555	555	555	575	550	510	497	498	514	491	501		540			491	528	575
GAGE 29-1	615	585	580	615		530	559	543	546	548	537	570	580			530	567	615
GAGE 29-2	505	500	510	560	480	480		498	498	484	477	470	510			470	498	560
GAGE 29-3	520	515	525	550	590	510		480	458	467	425	450	460	490		425	495	590
GAGE 30-1	235	250	220	170		240	245	250		271	309	350	320	320		170	265	350
GAGE 31-1	215	195	270	220	210	310	314	332	328	324	292	320	290	310		195	281	332
GAGE 46-1	335	265	350	385	330	390	296	332	335	318	341	390	390	430		265	349	430
GAGE 51-1	330	325	360	370	480		293	288	288	301	279	290	290	310		279	323	480
GAGE 56-1	195	220	215	225	200		194	201	189	203	196	220	210	230		189	208	230
GAGE 66-1	290	310	305	300	260	300	265	291	298	309	298	290	290			260	293	310
GAGE 92-1				269	290	310	250	251		245	249	240	220			220	258	310
GAGE 92-2				170	190	150		168	175	174	165		160	180		150	170	190
GAGE 92-3				190	190	220	172	177		153	182	200	200	200		153	188	220
GAGE 98-1										230	215	190	210	210		190	211	230
COOLEY H	225	220	205	220	225	220	194	211	204	226	215	210	210			194	214	226
COOLEY I	235	235	205	225	210	240	205	214	224	251	227	220	220	230	230	205	225	251
GARNER NO. 1	270	225	230	265	250	230	204	203	205	223	223	260		240		203	233	270
GARNER NO. 2	265	265	355	410		280	369		311	339	320	350	330			265	327	410
GARNER NO. 4	270															270	270	270
GARNER NO. 5	260	265	295	315		320	318	317	309	352	357		380			260	317	380
GARNER NO. 6			280	290	340	330	298	310	317	327	342	380	350	380		280	329	380
GARNER NO. 7						270	282	294	261	276			290			261	279	294
HUNT NO. 6	335	360	350		370	330	319	374	396	415	396	370	380			319	366	415
HUNT NO. 10	330	315		335		360	254	352	343	362	357	360	360			254	339	362
HUNT NO. 11	370	355	350	355	360	400	360	393	395	439	413	430	450			350	390	450
MEEKS & DALEY 59	260	235	230	235	290	240	201	225	137	206			320			137	234	320
RAUB NO. 2	240	245	235	255	300	270	254	295	289	285	274	280	260	270		235	268	300
RAUB NO. 3	235	230		235	260	240	258	259	249	249	255	270	300	320		230	258	320
RAUB NO. 4	220	205	235	255	260	310	254	294	272	266	268	300	290	300		205	266	310
RAUB NO. 5	370	360	400	470	400	420	407	396	471	421	397	410	440	470	390	360	415	471
RAUB NO. 6	210	190	245	280	230	240			230	217	217	230	220	270		190	232	280
RAUB NO. 8			170	195		200	193	188	191	194	200	210	220	210		170	197	220
SCHEUER	315	280	280	390	500	300	259		284			390	360			259	336	500
STEWART NO. 20											198		200			198	199	200
STILES	560	555		600	645	590	527	548	503	478		430	430			430	533	645
THORNE NO. 12	265	255	260	280		300	270	306		303	335	350	370	410		255	309	410
WARREN NO. 1	240	225	245	395	220	230	239	269	271	299	301	310	330			220	275	395
WARREN NO. 2	460	560	240	710	830	710	711	879	770	716						240	659	879
WARREN NO. 3	415	380	390	440	420	390		394	467	431						380	414	467
WARREN NO. 4	235	240	250	235	230	270	219	231	228	215	216		220			215	232	270
Riverside North and South Groundwater basins																		
DEBERRY	600	530	520	420	380	450	359	410	368	249	376		400			249	422	600
VAN BUREN NO. 1	545	500	520	495	420	440	388	397		432	339	340	370	350		339	426	545
VAN BUREN NO. 2	525	500	490	480	490	450	368	369	398	337	305		300	350		300	412	525
GARNER B	425	375		435	360		346	346	355	402	425	430	340			340	385	435
GARNER C	375	340	340		320	380	338	338	325	320		340	320			320	340	380
GARNER D		420	355	335	410	380	377	374	345	360		350	340			335	368	420
RUSSELL C										440	402	410	390	430		390	414	440
MOORE-GRIFFITH		390				220	241				348	400	410			220	335	410
PALMYRITA NO. 2																		
TWIN SPRINGS	715	650	590		530	500	504				552	590	570	660	520	500	580	715
ELECTRIC STREET	555	310	555	580	560	600	545	568	572	586		570		620	590	310	555	620
Distribution system blend																		
7TH & CHICAGO		355	400	370	360	410	339	359	348	333	353	330	360	380	400	330	364	410



APPENDIX F.5

Typical RRWQCP Effluent Quality

Appendix F.5

RWQCP Effluent Monitoring Part I

Constituent	12-month Avg-Limit (mg/l)	12-month Average (mg/l)	# Exceeded	12-month Avg Emission Rate Limit (lbs/day)	12-month Avg Emission Rate Value (lbs/day)
Total Filtrable Residue	650	531	0	216,840	140,629
Total Hardness	275	207	0	91,740	54,797
Chloride	140	88	0	46,704	23,342
Sodium	110	91	0	36,696	24,370
Sulfate	125	85	0	41,700	21,718
Boron	0.75	0.4	0	250	103
Fluoride	1	0.4	0	334	121
Barium	1	0.02	0	334	6
Iron	0.3	<0.10	0	100	<27
Manganese	0.05	<0.02	0	17	<5
Total Inorganic Nitrogen ***(Note 1)***	13	10.1	0	5,004	2,690

RWQCP Effluent Monitoring on Part II

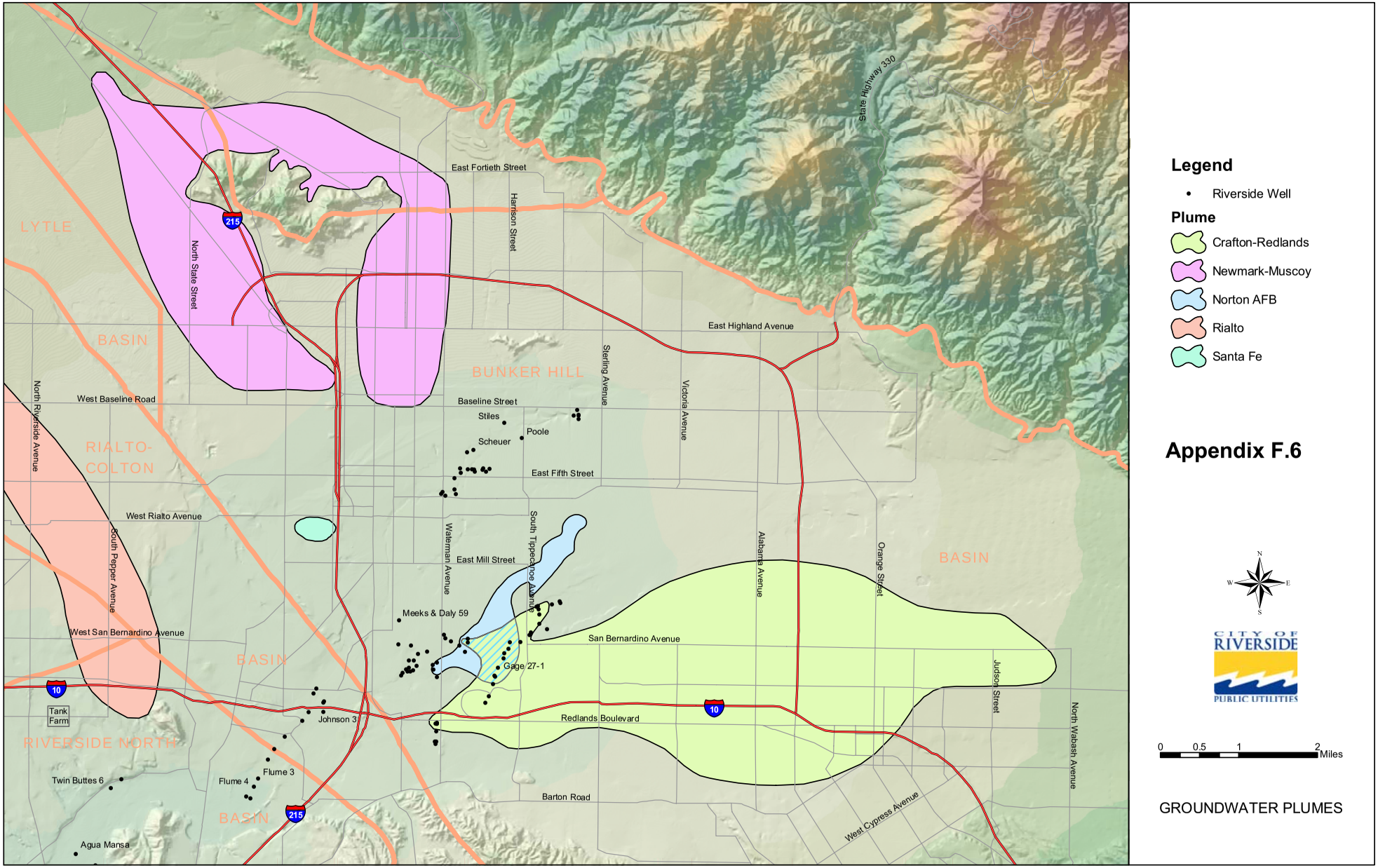
	Max Daily Limit (µg/l)	Max Daily Value (µg/l)	# Exceeded	Avg Monthly Limit (µg/l)	Avg Monthly Value (µg/l)	# Exceeded
Chromium (VI) *	16	<15	0	11	<15	0
Mercury	2.4	<0.5	0			
Selenium	20	<14	0	5	<14	0
Silver	13.1	<16	0			
Total Recoverable Cadmium	19	<15	0	4.4	<15	0
Total Recoverable Copper	84	22	0	53	19	0
Total Recoverable Lead	1040	<26	0	77	<26	0

	Daily Mass Rate Limit (lbs/day)	Max Daily Mass Rate (lbs/day)	# Exceeded	Avg Monthly Mass Rate Limit (lbs/day)	Avg Monthly Mass Rate (lbs/day)	# Exceeded
Chromium (VI) *	5	<3.8	0	4	<3.8	0
Mercury	0.8	<0.2	0			
Selenium	7	<3.6	0	2	<3.6	0
Silver	4	<4	0			
Total Recoverable Cadmium	6	<3.8	0	1	<3.8	0
Total Recoverable Copper	28	6	0	18	5	0
Total Recoverable Lead	347	<6.6	0	26	<6.6	0

Source: Parsons (2003) Recycled Water Phase I Feasibility Study and Citywide Master Plan

APPENDIX F.6

Groundwater Plumes



Legend

- Riverside Well

Plume

- Crafton-Redlands
- Newmark-Muscoy
- Norton AFB
- Rialto
- Santa Fe

Appendix F.6

N
W E
S

CITY OF RIVERSIDE
PUBLIC UTILITIES

0 0.5 1 2 Miles

GROUNDWATER PLUMES

APPENDIX F.7

DHS acceptance letter for WSCP

STATE OF CALIFORNIA-HEALTH AND HUMAN SERVICES AGENCY
GRAY DAVIS, *Governor*

DEPARTMENT OF HEALTH SERVICES
DRINKING WATER FIELD OPERATIONS BRANCH
1350 FRONT STREET, ROOM 2050
SAN DIEGO, CA 92101
(619) 525-4159
FAX (619) 525-4383

Appendix F.7

APR 27 1999
PUBLIC UTILITIES

April 22, 1999

Bill D. Carnahan
Public Utilities Director
City of Riverside
3900 Main Street
Riverside, CA 92522

Subject: City of Riverside, System No. 3310031
Review of System Wide Water Supply Contingency Plan

Dear Mr. Carnahan:

We have completed our review of the March 1999, System Wide Water Supply Contingency Plan, submitted with your April 16, 1999 letter. The Plan and your letter adequately address the issues and concerns expressed in our March 4, 1998 letter.

We appreciate the efforts of the City's staff who worked to put together this Plan. The Plan is comprehensive and does an excellent job of addressing the many water quality issues associated with the City's available sources of water supply. We are well aware of, and greatly appreciate, the complexity of the City's water supply and blending operations. We look forward to working with you and your staff in the future. If there are any questions regarding this letter, please contact Steve Williams or myself at (619) 525-4159.

Sincerely,

Toby J. Roy

Toby J. Roy, P.E.
District Engineer

cc: County of Riverside, Department of Environmental Health

Santa Ana Regional Water Quality Control Board

Kalyanpur Y. Baliga, DHS District Engineer, San Bernardino District

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APPENDIX F.8

Septic Ordinance

Appendix F.8

ORDINANCE NO. 6623

AN ORDINANCE OF THE CITY OF RIVERSIDE, CALIFORNIA, AMENDING SECTION 14.08.030 TO PROHIBIT THE INSTALLATION OF SEPTIC TANK SYSTEMS IN CERTAIN DESIGNATED AREAS IN THE CITY AND REQUIRING CONNECTION TO THE PUBLIC SEWER SYSTEM

WHEREAS, the City of Riverside is currently producing approximately fifteen percent of its drinking water supply from the North Orange area in the Riverside Basin and is planning to increase its production substantially from this area; and

WHEREAS, as a requirement under the Safe Drinking Water Act, the Public Utilities Department staff, with guidance and assistance from the California Department of Health Services , conducted a source water assessment for the drinking water wells in the area; and

WHEREAS, in the assessment report, staff identified and ranked the possible contaminating activities in the area and concluded that septic systems were among the activities that pose the greatest threat to the drinking water supply in the area, in that such systems are considered to be potential sources of nitrate, chemicals, and microbial contamination to the wells; and

WHEREAS, because of the abundance of the septic systems upgradient from the City's drinking water wells and potential for rapid expansion of developments with septic systems in the area, the Public Utilities staff proceeded with further evaluation of the potential impacts of the septic system and development of mitigation measures, including hydrogeologic conditions and water quality in the study area, which confirmed that septic systems pose a high risk of contamination to the City's drinking water wells in the area; and

WHEREAS, based upon the recommendations of Public Utilities staff, the City wishes to prohibit the installation of septic tanks to serve new construction in areas where the use of a septic tank poses a potential contamination risk to the City's drinking water wells in the area;

NOW, THEREFORE, BE IT ORDAINED by the City Council of the City of Riverside, California, as follows:

Section 1: Section 14.08.030 is hereby amended as follows:

Section 14.08.030 Connection to public sewer required.

///

City Attorney's Office
3900 Main Street
Riverside, CA 92522
(909) 826-5567

A. No one shall occupy a house or any other structure in the City or camp or live on any premises within the City, unless such house or other structure or such premises be properly connected to a public sewer whenever the property on which such house, other structure or premises is situated abuts upon a public or private street or alley or other right-of-way in which there exists a public sewer to which connection may be made; provided, however, if a house or structure is served by a satisfactorily functioning septic system, such connection to a public sewer system will not be required until the septic system for such house or other structure fails.

B. Anyone desiring to obtain a building permit for an addition to any existing house or structure shall be allowed to use a properly functioning septic system.

C. Anyone desiring to obtain a building permit for a new house or structure shall connect to the public sewer system when the property on which such house or structure is situated is not more than one hundred sixty feet from the public sewer and the right-of-way admits such connection, or if the house or structure is located within an area where the use of a septic tank poses a potential contamination risk to the City's drinking water wells in the area, as specified by resolution of City Council. All new houses or structures located within such area must be properly connected to the public sewer system, even if the property on which such house or structure is situated more than one hundred sixty feet from the public sewer and/or the right-of-way must be altered to admit such connection.

Section 2: The City Clerk shall certify to the adoption of this ordinance and cause publication once in a newspaper of general circulation in accordance with Section 414 of the Charter of the City of Riverside. This ordinance shall become effective on the 30th day after the date of its adoption.

///

///

///

City Attorney's Office
3900 Main Street
Riverside, CA 92522
(909) 826-5567

ADOPTED by the City Council and signed by the Mayor and attested by the City Clerk this 13th day of August, 2002.

Nancy E. Hart, Mayor Pro Tempore
Mayor of the City of Riverside

Attest:

Kelly Palmer, for
City Clerk of the City of Riverside

City Attorney's Office
3900 Main Street
Riverside, CA 92522
(909) 826-5567

I, Colleen J. Nicol, City Clerk of the City of Riverside, California, hereby certify that the foregoing ordinance was duly and regularly introduced at a meeting of the City Council on the 23rd day of July, 2002, and that thereafter the said ordinance was duly and regularly adopted at a meeting of the City Council on the 13th day of August, 2002, by the following vote, to wit:

Ayes: Councilmembers Beaty, Moore, Defenbaugh, Schiavone, Adkison, Hart, and Pearson.

Noes: None.

Absent: None.

IN WITNESS WHEREOF I have hereunto set my hand and affixed the official seal of the City of Riverside, California, this 13th day of August, 2002.

City Clerk of the City of Riverside

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City Attorney's Office
3900 Main Street
Riverside, CA 92522
(909) 826-5567

Appendix F.9

Groundwater Protection Zones